

REMARKS

Claims 9-14 and 26-40 stand rejected in the Office Action. With this reply, claims 9, 36, and 40 are amended and new claims 41 and 42 are offered. In addition, claims 37 and 38 are cancelled. Upon entry of the amendments, claims 9-14, 26-36, and 39-42 remain pending in the application.

Support for the amended claims is found in the specification as originally filed. Claim 40 is amended to correct a typographical error. Applicants respectfully request entry of the amendments.

INFORMATION DISCLOSURE STATEMENT

Applicants attach with this submission an Information Disclosure Statement citing the International Search Report and several references cited therein. Applicants also respectfully direct the attention of the Examiner to an Information Disclosure Statement filed in the previous application on October 31, 2003. Applicants respectfully request the Examiner consider the documents disclosed in both the current IDS and the October IDS, kindly initial forms 1449, and return to Applicants with the next Office Action.

REJECTION UNDER 35 U.S.C. § 103

Claims 9-14 and 26-40 stand rejected under 35 U.S.C. § 103(a) as unpatentable over the DiChiara reference (U.S. Pat. No. 5,928,775) in view of the Kourtides reference (U.S. Pat. No. 5,296,288). Claims 34-40 are rejected as obvious in view of the DiChiara and Kourtides reference and further in view of the Baker reference. Applicants respectfully traverse the rejections as applied to the amended claims and request reconsideration.

For a rejection of claims over a combination of references to be sustained, there must be a motivation outside the application to combine the references. Furthermore, the references when combined must disclose or suggest each and every limitation of the claims. The touchstone is whether the combined references would have made the invention as a whole obvious to one of skill in the art. The invention as a whole includes limitation recited in the claims and described in the specification, as well as properties or advantages inherent in the invention. In one aspect of addressing the invention as a whole, it is to be noted that, for example, a method claim may be non-obvious even if one or more steps of the claims recited the use of known or obvious compositions.

The invention of the whole includes the idea and result that a porous ceramic body treated by applying novel slurries of the invention to the surface and carrying out the other claim steps have increased temperature stability as opposed to porous ceramic bodies prepared with a slurry that does not contain the boron compound of the invention. For example, claim 9 recites the limitation that “the method produces a porous ceramic body stable to higher temperatures than a porous ceramic body produced without the at least one boron containing compound”. Claim 9 also recites a method for protecting a surface of and increasing the temperature stability of a porous ceramic body. Claim 26 recites a limitation that “the surface protected ceramic body can be reheated to 2500°F without cracking”. The invention as a whole includes these advantages. In considering teachings of the cited prior art references, it is appropriate to inquire whether the references would have made the invention as a whole - including the increased temperature stability limitation - obvious to a person of skill in the art.

Neither the DiChiara reference nor the Kourtides reference, nor their combination, would have made it obvious to a person of skill in the art that combining those teachings in the

way suggested by the Examiner would lead to a method that would increase the temperature stability of a porous ceramic body, or that would produce a surface protected ceramic body that could be heated to 2500°F without cracking, or that would produce a porous ceramic body stable to higher temperatures than one produced from a slurry without at least one boron containing compound. Because the invention as a whole would not of been obvious to a person of skill in the art in light of the combined references, Applicants respectfully submit that claims 9-14 and 26-35 as amended are patentable over the references. Applicants respectfully request the rejection be withdrawn.

That the invention as a whole as defined by the amended claims would not have been obvious is consistent with the following passage of the Office Action from page 2, section 1;

“One of ordinary skill in the art reviewing DiChiara and Kourtides would have found it obvious to substitute silicon hexaboride or silicon tetraboride for the molybdenum silicide in the slurry of DiChiara, with the expectation of providing the functionally equivalent emissivity modifying properties to the slurry, since it is suggested by Kourtides that such materials are substantially functionally equivalent as emissivity modifying agents for high temperature ceramic.”

The quoted passage from the Office Action, commenting on an earlier rejected version of the claims, asserts that a person of skill in the art in light of the teachings of the references would have thought that substituting silicon hexaboride or silicon tetraboride for molybdenum silicide would give the equivalent results. However, as stated above, the invention as a whole includes the requirement that use of a boron compound in the slurries of the invention improve the stability of the porous ceramic bodies treated with slurries. The amended claims recite improving the thermal stability of porous ceramic bodies by applying a slurry; the combined references fail to teach that limitation of the amended claims. For this further reason, Applicants respectfully request that the rejection, as applied to the amended claims, be withdrawn.

The Office Action further states that a “proper combination does not need to yield improved results, only the expected results”. The Examiner is stating the proper test for the patentability of compositions when, for example, one component is substituted for a new component. However, such is not the proper method test for method claims that make use of such compositions. As noted above, it is possible to use an obvious composition in a new or non-obvious method. The patentability of a method claim is properly analyzed under the invention as a whole analysis as described above. Here, even if the novel slurry composition would have been obvious in light of the DiChiara and Kourtides references because the secondary reference teaches the equivalency of the hexaboride and the silicide as emissivity agents (and would therefore motivate a substitution), the method of improving the temperature stability of porous ceramic bodies by applying the slurry to the surface would not have been obvious to the skilled artisan, not least because there was no reason to expect the use of the novel slurry would increase the temperature stability of the treated ceramic body. Put another way, the invention as a whole includes improved performance which, as stated in the Office Action, was not to be expected by one of skill in the art. For these additional reasons, Applicants believe the amended claims are patentable over the cited references, and request the rejection be withdrawn.

Claim 36 has been amended to recite that the slurry applied to the surface of the ceramic body comprises boron carbide, silica, and cordierite. Along with amending claim 36, Applicants have cancelled claim 37 and 38. As noted in the Examples, such a method surprisingly produces protected porous ceramic bodies having a higher temperature stability in that a treated ceramic body may be heated to 2500°F without spallation or separation of the surface. Applicants believe that amended claim 36 is commensurate in scope with the

unexpected results demonstrated in the specification. Applicants respectfully request that the rejection as applied to amended claim 36-40 be withdrawn.

NEW CLAIMS 41 AND 42

New claims 41 and 42 further define the invention as recited in amended claim 9. In claim 41, the slurry comprises boron boride, cordierite, silica, and water. Such a slurry is exemplified in the Examples of the specification, and produces unexpected results in increasing the temperature stability of the treated porous body. In claim 42, the slurry contains not only the boron containing compound recited in claim 9, but further comprises emissivity agents such as molybdenum silicide or silicon carbide. Applicants respectfully submit that such slurries are neither disclosed nor suggested by a combination of the cited references. For these reasons, Applicants respectfully request that claims 41 and 42 be passed to allowance.

CONCLUSION

For the reasons discussed above, Applicants believe that claims 9-14, 26-36, and 39-42 as amended are patentable over the cited references. Accordingly Applicants believe the claims are in a state of allowance and respectfully request an early notice to of such allowance. The Examiner is invited to telephone the undersigned if that would be useful to resolving any issues.

Respectfully submitted,

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